Sustainability Starts with Students 2010

Adlai E. Stevenson High School

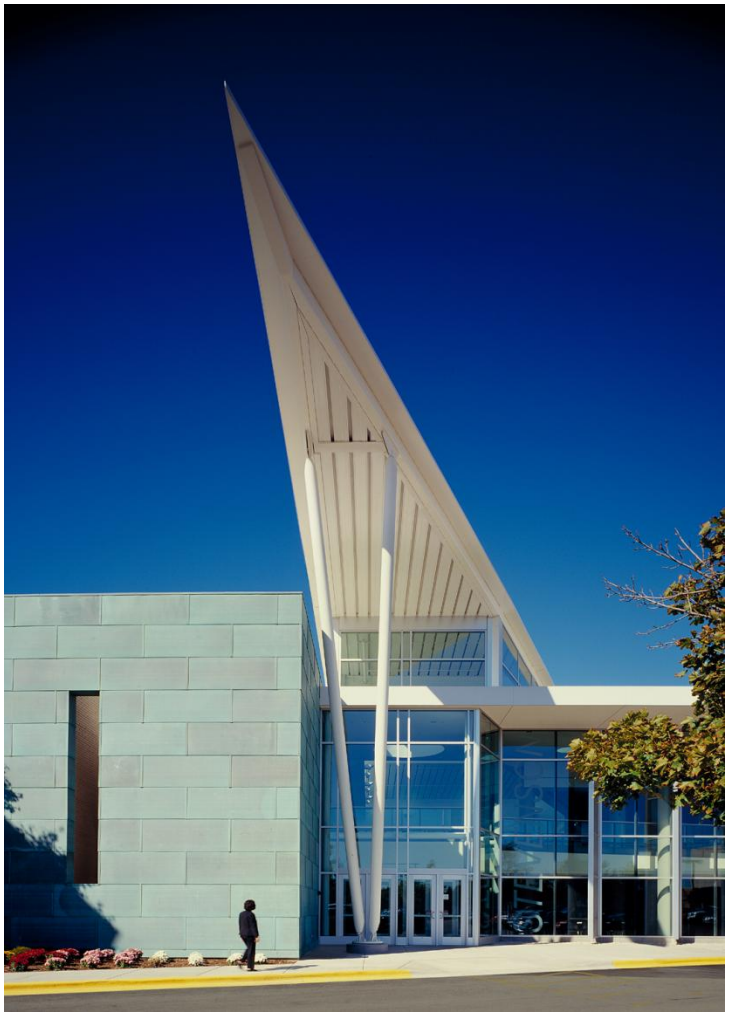
April 9th, 2010

Adlai E. Stevenson High School

Michael Lyman – Student,
AP Environmental Science, FMP,
Green Team Club Member

Dave Wilms - AP Environmental Science Teacher – Freshman Mentor Program, Curriculum & Learning

Mark Michelini, Assistant Superintendent , Sustainability



Compelling Reasons to Go Green in a PLC

- Over the years there has been several pressures
  - Students
  - Faculty
  - School Board and Administration
- In 2007-08 the Board of Education created the Green Committee
  - Representation from each group
    - Students
    - Faculty & Staff
    - Administration
    - Board Members
    - Community
    - Business Partners

Role of Effective Education

- Teach students to become responsible decision makers. (Personal, local, global)
- Establish a long term or sustainable life skills for future citizens.
- Teach academic content from a “News You Can Use!” perspective. Connect classroom concepts to life skills.

Stevenson High School Green Committee

- Importance of the Green Committee
  - Developed Mission, Vision & Values
  - Developed Green Goals
  - Provided a forum and a framework for the diverse parts of the school to work together and become coordinated in pursuing common goals.
  - Actively sought student input in all parts of the Green Committee Mission.

Stevenson High School/Wilms
Green Mission Statement

- Promote life-long learning for students, staff and community members to enable effective decision-making in the use and preservation of natural resources.
- Establishment of an Annual Earthday Speaker Forum to learn about local Environmental issues. (Est. 1990) "News you can use."

Stevenson High School
Green Goals (Students Homes)

1) Increase Awareness and Participation in Green Initiatives

2) Reduce Kilowatt Burn by 5% per Fiscal Year

3) Increase the Amount of Recycled Waste By 50% in the next fiscal year

4) Reduce the Amount of Paper Used and the Number of Copies Made by 10% Over the Next Year

5) Reduce Natural Gas Consumption by 5% Over the Next Fiscal Year

6) Reduce the Number of Fossil Fuel Vehicles on Campus by 10% Over the Next Fiscal Year

Stevenson High School

- Sustainability
- Responsibility

- Accountability
- You cannot manage until you can measure.
- Freshman Survey - 971 Forms Completed

FMP Survey Results

- How many think that 1 Gallon of gas makes 10 lbs of CO2 or less.
- 58%

  (Real Ans. 1 Gal. = 20 lbs of CO2)

- Most think the best solution to global warming is to….
- Plant more trees. (Most common ans.)

  (Real Ans. Improve energy efficiency.)

FMP Survey Results

- How many think the global surface temperature has gone up 5^{o} in the last century?
- 54%

  (Real Ans. 1^{o})

- How many say they will make fuel efficiency a top priority when they select a car.
- 55%

FMP Survey Results

- How many think Stevenson has taught them about being environmentally aware.
- 24%

- How many do not think that Stevenson has taught them about being environmentally aware.
- 36%

FMP Survey Results

- How many said they would ride bikes more if it were safer and there were bike paths.
- 65%

(We need to pursue this with the Green Team and school district communities.)

FMP Survey Results

- How many think that temperature has gone up from an increase in CO2?
- 75%

How do we help them see their role in helping reduce their personal carbon footprint?

Freshman Mentor Program activities for 1000 students.

Stevenson High School
2009-2010 FMP Pilot Program

- Incorporate Green Initiatives into FMP Program
  1. **Light Bulbs** – CFC/LED Financial Costs and Impact on your home lighting.
  2. **Light Bulbs** – CO2 and Light Bulbs & Climate Change
  3. **Light Bulbs** – Fishing, SO2, Acid Rain and Light blubs
  4. **Cars** – Your car, MPG and cost.
  5. **Cars** – CO2 and impact on climate change.
  6. **Recycling** – Your relationship with the Aluminum Can
  7. **Recycling** – Your relationship with paper
  8. **Water Bottles** – Plastic vs. Aluminum

Stevenson High School
2009-2010 FMP Pilot Program

- Incorporate Green Initiatives into FMP Program
  9. **Landscaping** – Saving money with trees
  10. **Biodiversity** – Native Species and a yard filled with life
  11. **Biodiversity** – Bats, Houses and mosquitoes (picking your neighbors)
  12. **Energy** – Warm baths, warm planets and water heaters
  13. **Energy** – Windows and doors.

Making Cars and CO2 Output Real to Students… (Freshman Units) in terms of Elephant Equivalents??!!

Type of Vehicle	Miles per Gallon	Total Gallons used during life of car.	Total cost of Gas	Pounds of CO2	Elephant Equivalents
Jeeps, SUV's 4WD-V8, etc.	15	10,800	$32,400	216,000	21
Mini Vans V6 Auto, etc	20	8,100	$24,300	162,000	16
Accords/Camery, etc. – Auto	25	6,480	$19,440	129,600	12
Civics/Corolla etc	30	5,400	$16,200	108,000	11
Prius Hybrid	45	3,600	$10,800	72,000	7
Car of the Future (diesel hybrid)	100	1,620	$4,860	32,400	3
Your Car					

Stevenson High School Academic Opportunities

- Going Green has provided many new and exciting learning opportunities
- The challenge is sharing the changes that are taking place at Stevenson with the students, faculty, and community so they can become active participants.

Stevenson High School
2007-08 Green Roof
Planted by AP Env. Science
Science Fair
Research
Gold Medal

Stevenson High School
2008-09 Photovoltaic System
Science Club helps write the Grant
Student Science Fair Project
State Best in Engineering Winner

Stevenson High School

Some Early Successes

Composting of Yard Waste – 365 days a year process.

It is estimated that 27 yards of organic material was composted by the Grounds Crew during 2009.

Stevenson High School

Some Early Successes

Reclamation of Rainwater

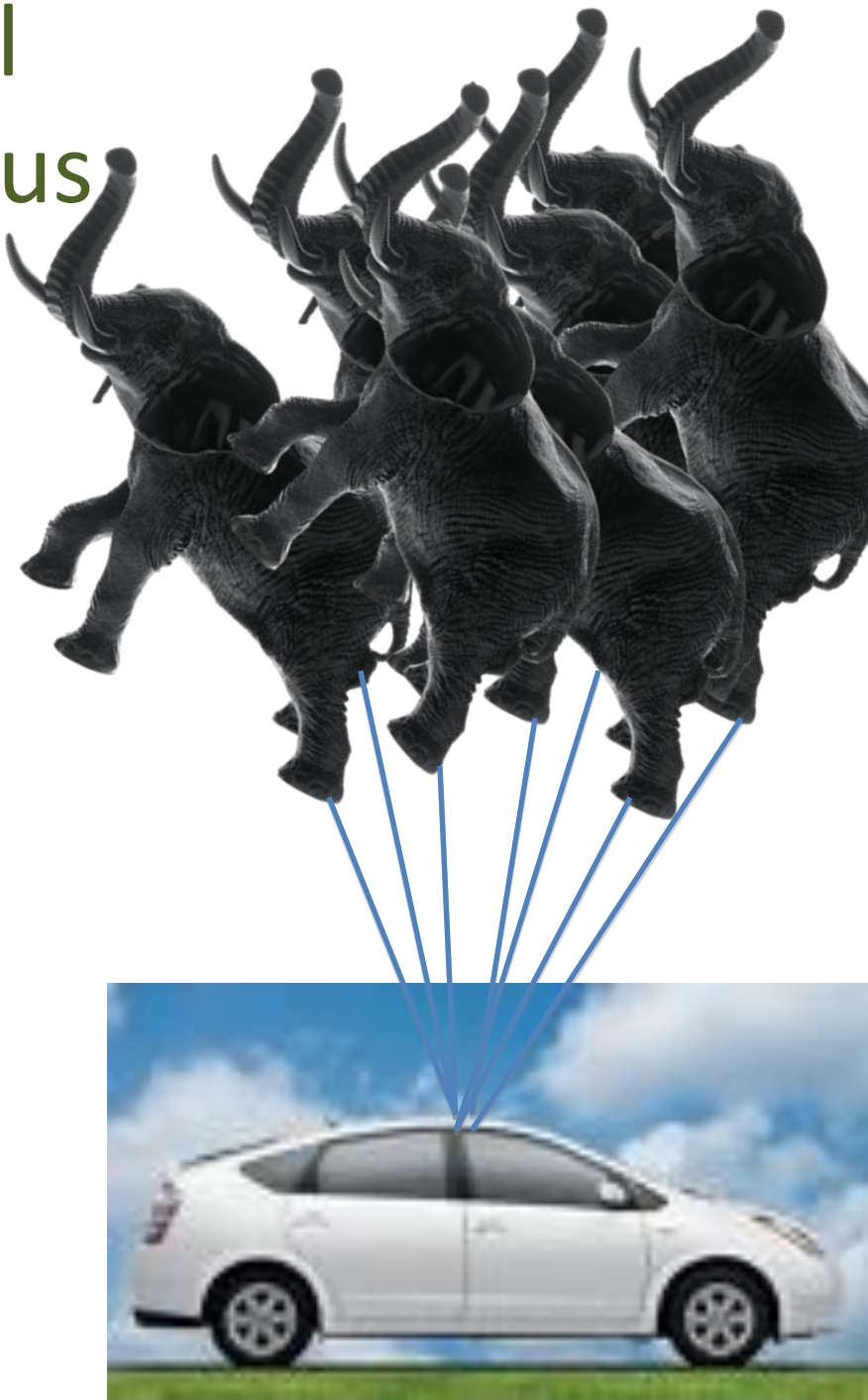
During the summer of 2009, it is estimate that the District collected over 6,000 gallons of rain water.

Stevenson High School 2009-10 Purchase of Prius

Greening of All Departments

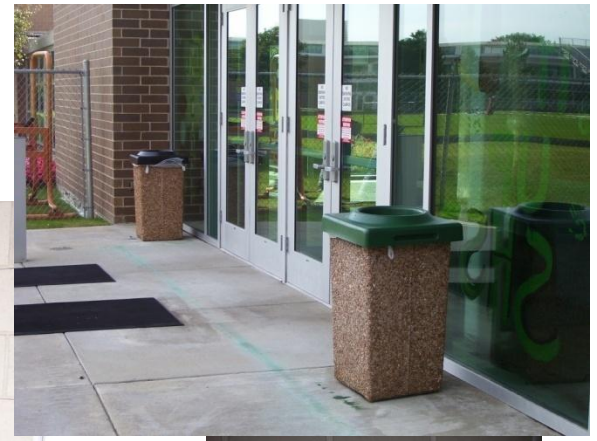
- Drivers Education – (7 vs. 21 Elephants of CO2)
  - Learning about alternatives to fossil fuel vehicles
  - Opportunity to discuss types of hybrid vehicles
  - Opportunity to learn about miles per gallon comparisons

(Note: Elephants not drawn to scale.)



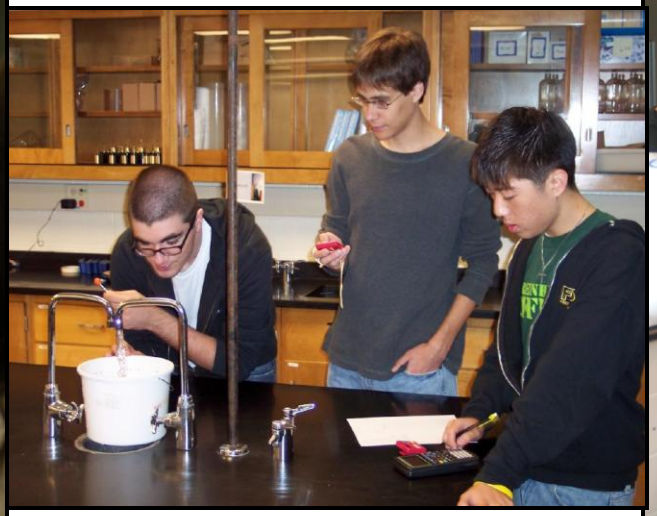
Stevenson High School
Some Early Successes
Students recycle better than the Faculty

New Recycling System



New in 2008-09

New in 2008-09


Increasing awareness and participation starts with curriculum…

Content Area Curriculum

Student Home Energy Project

Teaching the concept of ROI's (Return on Investments) in science classes.

Students teach parents economics (save$), resource conservation, and how to improve sustainability.

APES Home Energy Project

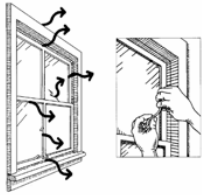
We have been discussing electricity generation and the benefits of increasing the efficiency with which we use energy. While learning about all this in class is great, it really doesn't mean anything unless you apply these lessons in your life outside of class.

With that in mind, I have a job for you. I would like you to improve the energy efficiency of your home. You may do this in one of several ways. You may choose from one of the following projects (or another that you think of and clear with me). For ideas go to EnergyStar at: http://www.energystar.gov/index.cfm?c=home_improvement.hm_improvement_index

1. Purchase and install at least 5 energy efficient light bulbs (fluorescent or LED).
2. Purchase and install a water heater blanket.
3. Improve the efficiency of your doors and/or windows by purchasing and installing weather-stripping, window insulation, and/or caulk.
4. Improve the efficiency of your heating system by duct-taping/caulking leaks in the ductwork or insulating the ductwork.
5. Reduce your energy demand by installing a programmable thermostat.
6. Install insulated switch plates for electric sockets or light switches on all external wall outlets.

For whichever project you choose you must complete the following tasks:

1. Take pictures of the installation
2. Write a narrative describing the process of purchasing and installing the equipment.
3. Provide calculations (get electricity/gas prices from recent bill) along with a description of the assumptions you made. Many numbers require some guesing. Make educated guesses and explain.
   a. Energy & monetary cost of current system per year.
   b. Energy & monetary cost of new, more efficient system per year (excluding purchase and installation costs).
   c. Annual energy and money savings with new system
   d. With purchase and installation costs of new system included, how long will it take to recoup the costs of the new system?
4. Provide a copy of the receipt from the purchase of the materials.



This entire project will be due Tuesday, March 2nd. It is worth 30 points.

Content Area Curriculum
Home energy project

Here's how it can be done in science classrooms.

Roster _____Name_____Period_____Date_____

	Pts	Present	Partial	Absent
Pictures (include yourself)	4			
Narrative: Purchase/Parent Discussion ½ page	4			
Narrative: Installation/Experience ½ Page	4			
Old Current System Costs - Explain Assumptions - (Energy Costs X Amount of Energy Lost = Current Costs/Yr,)	4			
New System Costs - Explain Assumptions - (Energy Costs X Amount of Energy Saved = New Costs/Yr.)	4			
Energy Costs Savings – (Old energy Costs/Yr – New Energy Costs/Yr. = Money Saved per year.)	4			
ROI (Return on Investment) How long will it take for the costs of the upgrade to be paid off in cost savings?	4			
How could this be paid for if someone did not have money for installing the new system?	4			
Receipt/Date or Parent Signature with costs verified	2			

Total_____

Students (APES/FMP) learn that an investment of $24.00 in a LED light bulb will save $265.00 in electricity and bulb costs over the life of one LED bulb.

Student Tree Planting Project (E.C.)

(Ripple Effect – Over 1000 Trees Planted)

There are many reasons why you could take a personal interest in planting a tree. In this project, you will:

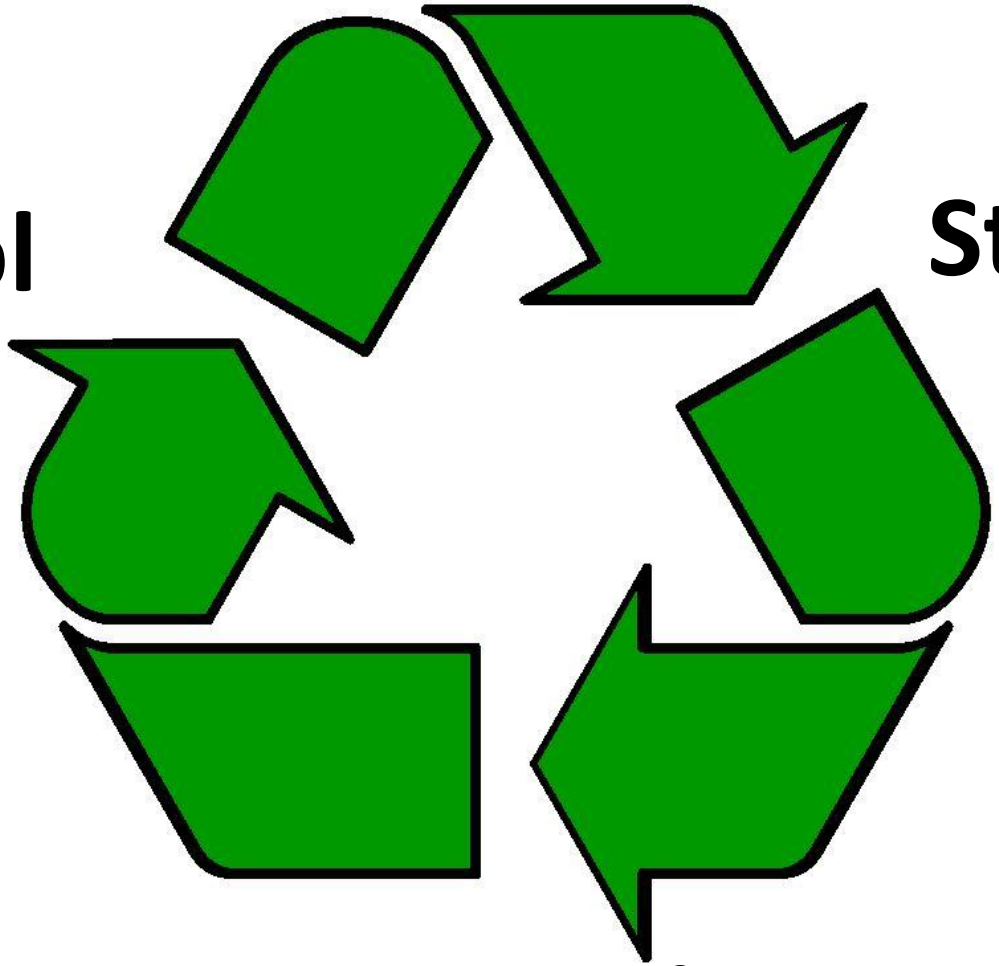
- 1. Select an appropriate species of tree (for maximum credit, choose a tree native to our area).
- 2. Plant the tree.
- 3. Care for the tree
- 4. Promise to take care of the tree the first year.
- 5. Hopefully come back in 50 to 100 years and see how the tree you placed on this Earth is doing.

Stevenson High School PLC

Inspiration, Synergy, and Innovation

School

Students



Community

Adlai E. Stevenson High School

Mike Lyman, Student

Dave Wilms, Faculty Member

Mark Michelini, Assistant Superintendent